Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Amendment of the Commission's Rules to Establish	)	
Rules and Policies Pertaining to a Mobile Satellite	)	CC Docket No. 92-166
Service in the 1610-1626.5/2483.5-2500 MHz	)	
Frequency Bands	)	

COMMENTS OF
THE WIRELESS CABLE ASSOCIATION INTERNATIONAL, INC.

The Wireless Cable Association International, Inc. ("WCAI"), by its attorneys and pursuant to Section 1.415 of the Commission's Rules, hereby submits its initial comments in response to the *Notice of Proposed Rulemaking* ("*NPRM*") proposing rules and policies to govern various voice and data mobile satellite services ("MSS") proposed to be provided in the 1610-1626.5 and 2483.5-2500 MHz frequency bands. Specifically, WCAI submits these comments in response to the Commission's solicitation of input regarding the potential for interference between MSS and fixed services operating above 2500 MHz.

WCAI, the trade association of the wireless cable industry, has a vital interest in the outcome of this proceeding. As the Commission is well-aware, wireless cable systems employ channels in the 2500-2690 MHz band allocated to the Instructional Television Fixed Service ("ITFS") and the Multipoint Distribution Service ("MDS") to deliver multichannel video programming to subscribers.[1/] Because its members rely upon the frequency band

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[1/] *See, e.g. Amendment of Parts 21, 43, 74, 78, and 94 of the Commission's Rules Governing Use of the Frequencies in the 2.1 and 2.5 GHz Bands Affecting: Private Operational-Fixed Microwave Service, Multipoint Distribution Service, Multichannel* (continued...)

immediately above that which some MSS proponents plan to utilize, WCAI has previously submitted comments in this proceeding,[2/] and actively participated on the MSS Above 1 GHz Negotiated Rulemaking Committee (the "MSS Committee").[3/]

In its report to the Commission, the MSS Committee has expressed concern that out-of-band emissions from ITFS channel A1, which is at 2500-2506 MHz, could cause interference to some MSS receivers unless substantially more stringent limitations on out-of-band emissions are imposed.[4/] In the *NPRM*, the Commission acknowledges the potential for inter-service interference between MSS and fixed ITFS operations in the 2.5 GHz band, and has solicited answers to a variety of questions arising out of that potential.[5/]

At the outset, the Commission should recognize that any potential interference to MSS use of the 2483.5-2500 MHz band emanating from 2.5 GHz fixed services likely will pale in comparison to the interference MSS will suffer from Industrial, Scientific and Medical ("ISM") applications in the 2400-2500 MHz band. Although the MSS Committee itself was

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1/ (...continued)
Multipoint Distribution Service, Instructional Television Fixed Service and Cable Television Relay Service, 6 FCC Rcd 6792 n.2 (1991); *Amendment of Parts 1, 2 and 21 of the Commission's Rules Governing Use of the Frequencies in the 2.1 and 2.5 GHz Bands*, 7 FCC Rcd 3266 n.8 (1992).

2/ *See* Comments and Application of WCAI, CC Docket No. 92-166 (filed Sept. 14, 1992).

3/ *See NPRM*, at ¶ 8 n.20.

4/ Report of the MSS Above 1 GHz Negotiated Rulemaking Committee, at 26-27, 46-47 (April 6, 1993).

5/ *See NPRM*, at ¶¶ 63-65.

unable to reach a consensus on the potential for interference to MSS from ISM applications, the report of Drafting Group 2C specifically found that:

> There do not appear to be any adequate solutions to overcome ISM interference other than for MSS systems to avoid serving those areas with high ISM use (e.g., most urban areas).
>
> Accordingly, MSS downlink transmissions in the 2483.5-2500 MHz band may be limited to sparsely populated areas. Even downlinks in these sparsely populated areas may experience interference varying by location and time.[6/]

Before the Commission gives serious consideration to proposals by MSS proponents to impose additional restrictions on out-of-band emissions by 2.5 GHz band stations, the Commission must be convinced that the 2483.5-2500 MHz band can actually be utilized by MSS. While WCAI would not oppose the imposition of reasonable new restrictions on out-of-band ITFS emissions if implementation costs are paid for by the MSS system operators that benefit, no new restrictions should be imposed if MSS cannot utilize the 2483.5-2500 MHz band for other reasons.

To the extent that the Commission seeks in this proceeding to quantify the potential for interference from fixed operations in the 2.5 GHz band to MSS, it will have to look, at least in the first instance, to the MSS proponents for answers. Particularly given the disparate technologies that various MSS advocates propose to employ, WCAI is unable to determine with any precision the degree to which out-of-band emissions by ITFS operations will cause harmful electrical interference to MSS systems. While the MSS Committee states that

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[6/] Report of Drafting Group 2C, "Sharing with Services other than ARNS and RAS, at 10-11 (April 1993)[hereinafter cited as "Report of Drafting Group 2C"].

interference from channel A1 "will be a serious problem unless MMDS [*sic*, should read ITFS] out-of-band emissions from the lower channel are suppressed by much more than the current 60 dB requirement," the basis for that conclusion is unspecified.[7/] WCAI trusts that those MSS proponents who would use the 2483.5-2500 MHz band will be providing additional information to justify their request for new restrictions on ITFS out-of-band emissions. If they do, WCAI will respond to that information in its reply comments.

As they prepare their analyses, the proponents of MSS use of the 2483.5-2500 MHz band will need to consider issues beyond those addressed by the MSS Committee. Most importantly, they will need to address an additional potential source of interference -- low cost broadband repeaters employed by ITFS licensees and wireless cable system operators to relay signals into areas that are otherwise unserviceable due to terrain blockage or man-made obstructions. These devices are generally wideband amplifiers that pass the entire 2500-2690 MHz band, adding a small amount of distortion (primarily composite triple beat) that appears both in-band and out-of-band. The Commission has authorized these low cost devices as an effective vehicle by which ITFS licensees and wireless cable system operators can serve additional areas, acknowledging that "[t]his capability can significantly affect the viability of an MDS licensee or wireless cable system . . .."[8/] To date, the MSS industry has failed to

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[7/] *See* MSS Committee Report, at 26. *See also* Report of Drafting Group 2C, at 7 [stating in conclusory fashion that current restriction on out-of-band emissions "is inadequate."].

[8/] *Amendment of Parts 21, 43, 74, 78, and 94 of the Commission's Rules Governing Use of the Frequencies in the 2.1 and 2.5 GHz Bands Affecting: Private Operational-Fixed Microwave Service, Multipoint Distribution Service, Multichannel Multipoint Distribution Service, Instructional Television Fixed Service and Cable Television Relay Service,* 5 FCC Rcd 6410, 6422 (1990)[hereinafter cited as "*Wireless Cable Order*"].

indicate how it would eliminate out-of-band emissions from these important devices without increasing their cost to impractical levels.

In addition, MSS proponents may have to revise their prior analyses to correct errors in their underlying assumptions regarding ITFS usage. Apparently, the MSS Committee was under the mistaken impression that ITFS channel A1 and adjacent channel B1 (which is at 2506-2512 MHz) are generally separated by 50 miles and transmit on opposite polarizations.[9/] This simply is not the case. Particularly as wireless cable operators accelerate their accumulation of channels, in many cases all ITFS channels are co-located and operate employing the same polarization. This could lead to additional interference to MSS as a result of intermodulation and/or overloads of the MSS receiver. It is imperative that the MSS community analyze the potential for such interference, and assess the likely costs of a cure.

Especially if the MSS proponents insist on additional attenuation of the order suggested by the MSS Committee, it may not be possible for MSS to operate in the 2483.5-2500 MHz band without interference from 2.5 GHz fixed users.[10/] Implicit in the *NPRM* is the recognition that use of the 2483.5-2500 MHz band is not essential to the future of MSS. The response to the Commission's inquiry, "Can MSS operators avoid harmful interference by not providing service in those areas surrounding ITFS transmitters?" is clear. Certainly, one manner in which MSS operators could avoid harmful interference from fixed operations

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[9/] *See* Report of Drafting Group 2C, at 7.

[10/] In the *NPRM*, the Commission inquires as to whether MSS systems should be permitted to accept harmful electrical interference from ITFS facilities. *See NPRM*, at ¶ 65. WCAI does not oppose such an approach.

in the 2.5 GHz band is to avoid operating in those areas where ITFS transmitters and wireless cable boosters are utilized.

Equally clear is the response to the *NPRM*'s question "Can MSS operators avoid harmful interference if they do not operate in the higher frequency portion of the 2.4 GHz band?" Without doubt, the most effective mechanism by which an MSS system can avoid harmful electrical interference from the fixed services at 2.5 GHz is to refrain from using the 2483.5-2500 MHz band. That is certainly feasible -- the MSS system proposed by Motorola Satellite Communications, Inc. will operate bi-directionally in the 1.6 GHz band, and will not employ the 2483.5-2500 MHz band at all. Thus, the Commission need not impose draconian requirements on ITFS and MDS licensees in order to promote MSS; MSS can become a reality whether or not the 2483.5-2500 MHz band is available.

The *NPRM* also solicits comment on whether the MSS community should bear any costs associated with attenuating out-of-band emissions below 2500 MHz. If the Commission does impose new restrictions on out-of-band emissions, equitable considerations demand that the costs incurred by ITFS licensees and wireless cable operators in complying be borne by the MSS community. The Commission has historically required newcomers to pay for necessary equipment upgrades, particularly where the ITFS has been concerned. For example, in its *Second Report and Order* in General Docket No. 90-54, the Commission required those forcing an ITFS licensee to modify its equipment to avoid interference to be "responsible for all costs necessary to the modification, including purchasing, testing and installing new equipment (including labor costs), administrative costs, legal and engineering expenses

necessary to prepare and file the modification application . . ., and other reasonable documented costs."[11/] In addition, the party forcing the modification "must also secure a bond or establish an escrow account to cover reasonable ongoing expenses that may fall upon the remaining licensee such as incremental increase in power, maintenance and site rental rates, if applicable."[12/] No less should be required here. The costs associated with upgrading a single transmitter to the standards advocated by the MSS Committee are alone estimated to run between $10,000.00 and $30,000.00, and ongoing costs (such as increase expenses for electricity and additional boosters) are inevitable.[13/]

Finally, the *NPRM* seeks comment on whether ITFS facilities will soon be converting to digital modulation and, if so, the impact of that conversion on MSS use of the 2483.5-2500 MHz band.[14/] It is inevitable that many, and perhaps most, ITFS stations will eventually convert to digital technology. It is premature, however, to estimate at this juncture when that conversion will begin and how rapidly it will occur.

[11/] *Amendment of Parts 21, 43, 74, 78, and 94 of the Commission's Rules Governing Use of the Frequencies in the 2.1 and 2.5 GHz Bands Affecting: Private Operational-Fixed Microwave Service, Multipoint Distribution Service, Multichannel Multipoint Distribution Service, Instructional Television Fixed Service and Cable Television Relay Service,* 6 FCC Rcd 6792, 6797 (1991).

[12/] *Id.*

[13/] The equities particularly favor the incumbents in this case. It is worth noting that the current restrictions on ITFS out-of-band emissions were adopted by the Commission without any objection having been voiced by MSS interests. *Wireless Cable Order*, 5 FCC Rcd at 6421. The initial MSS proposals were filed during the same time period as the promulgation of the current rule, so it is obvious that the MSS proponents could have participated when the Commission was considering the adoption of the current restrictions on out-of-band emissions.

[14/] *See NPRM*, at ¶ 65.

It is uncertain at present which of several possible digital modulation schemes will be employed in the 2.5 GHz band and when equipment to implement each of those schemes will be commercially available. The Wireless Cable Research and Development Center has recently estimated that it will be approximately one more year before equipment to implement the modulation scheme that is on the fastest track will be available to begin converting ITFS stations to digital use, and some unknown time after that before sufficient equipment is available for widespread conversion using that modulation scheme. Other digital technologies will take even longer to implement. Moreover, the costs of conversion are today unknown, and one can only speculate as to when funding will be available to fuel the conversion of ITFS facilities to digital modulation. The impact of the conversion to digital technology by ITFS licensees on interference to MSS is also impossible to predict until it is known which modulation scheme or schemes will be employed by ITFS licensees and more information is made available by the MSS proponents.

WHEREFORE, for the foregoing reasons, WCAI urges the Commission to move with caution before amending its rules governing out-of-band emissions in the 2.5 GHz band. Before any additional burdens are placed upon ITFS licensees, MSS proponents should be required to more clearly demonstrate that additional attenuation of out-of-band emissions is necessary, that a rule requiring such attenuation will not effectively preclude the use of broadband boosters to expand service into shadowed areas, and that the MSS industry is

ready, willing and able to bear all current and future costs associated with implementing rules requiring greater attenuation.

Respectfully submitted,

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May 5, 1994